



**LOUDOUN COUNTY, VA
TECHNICAL REVIEW**

**PROPOSED
NEW
(2) 125-foot MONOPOLES
by
COMMUNITY WIRELESS STRUCTURES
(CWS)**

CWS Site # 108 Arlington Corner
CMPT 2007-0007
SPEX 2007-0014

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC.

A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-09

November 2, 2007



THE ATLANTIC GROUP
OF COMPANIES INC.

EXECUTIVE SUMMARY:

Community Wireless Structures ("CWS") of Falls Church, Virginia, has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct two (2) 125-foot monopoles on property owned by Wyant Farm Associates located along the east side of Berlin Turnpike (Route 287), between Ash George Road and Rickard Road at 14349 Berlin Turnpike, Lovettsville, Virginia.

CWS is a tower developer for wireless infrastructure and offers co-location opportunities for eligible wireless carriers such as cellular, PCS, paging, and backhaul providers. CWS has submitted a letter of interest from Verizon Wireless ("VZW"), Sprint-Nextel, Fibertower Corporation ("Fibertower"), and Mobile Satellite Ventures ("MSV"). Verizon Wireless and Sprint-Nextel are FCC licensed telecommunications providers authorized and mandated to provide wireless communications services to the Loudoun County area. Fibertower is a wireless backhaul provider currently doing a network design in Loudoun County. MSV is currently designing a network for the Washington DC market in preparation for offering a new wireless service. The Applicant is proposing the construction of two new 125-foot monopoles to support service delivery in an area of verifiable lack of coverage along Berlin Turnpike (Rt 287) near the intersection of Ash George Road (Route 693).

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant's recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that this application should only allow one (1) 125- foot Monopole tower to be constructed with new setback requirements, and should be considered for approval contingent upon the criteria noted in Section 3.0 "Recommendations" of this document.

George N. Condyles IV

George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 **TECHNICAL:**

1.1 **Siting**

The proposed tower site is a 60' x 80' fenced compound on approximately 4,800 square foot portion of an 58.16 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 17 ((29)) (MCPI # 374-35-9614). The proposed site, located along the east side of Berlin Turnpike (Route 287) between Ash George Road (Route 693) and Rickard Road, can be accessed off of Ash George Road (Route 693) and is physically located at coordinates N 39° 13' 15.09" and W 77° 39' 27.64" at a ground elevation of 452.696'. This site is proposed in a wooded area of 65' to 70' hardwood trees.

The proposed 12-foot wide gravel access driveway would be accessed from Ash George Road (Route 693) near the intersection with Berlin Turnpike (route 287) via property owned by Ethel J Trustee ET AL Wyant. This property, a 69.10 acre parcel, is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 17 ((18)) (MCPI # 374-16-1335). The driveway would run north, immediately adjacent and parallel to Berlin Turnpike approximately 1624 Linear Feet. According to the County Staff Report for the Planning Commission Public Hearing dated September 17, 2007, Page 13, Paragraph four, under label "Transportation",

"Upon establishment of this driveway during the site plan process, the applicant may have to create an emergency access easement to accommodate emergency services, which would likely require a surveyed location. In consideration of concerns for the future widening of Route 287, it is requested that this proposed driveway and emergency access easement be located a minimum of 50 feet from the centerline of Route 287 to accommodate the potential of future road widening. The plat should be revised to incorporate this recommendation."

The Applicant is proposing to construct two (2) 125-foot monopoles with 5' lightning rods, which can accommodate up to three (3) co-locators on each monopole. The site compound could accommodate approximately 6 shelters or cabinets and could be accessed via a proposed 12' wide gravel access driveway.

Setback:

The tower complies with the County's setback requirement that "...towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)] In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 125' monopole setback from the nearest

property line approximately 125', which is 100% of the height of the tower. The tower should be slightly moved to achieve a 110% setback from the property line.

The nearest occupied dwelling to the monopole is approximately 1,000'+, which achieves a greater than 750' setback from a dwelling.

The monopoles are setback from the historic George Ash House located just south of Ash George Road by approximately 1,500', which is a 1200% setback.

Geotechnical:

No special requirements

Landscape Buffer:

The proposed telecommunications compound is located in the southwestern portion of the property in a wooded area consisting of deciduous trees approximately 50' to 80' in height. In response to the County's request to relocate "...the monopole slightly to the south, within the existing forest cover, to better screen the facility from adjacent residential uses.", the Applicant complied. According to CWS, the new location tripled the distance from the nearest residence, however it was situated closer in proximity to the historic George Ash house resulting in a visual impact on the historic property. In response to the visual impact issue, CWS proposed reducing the height from the original request of 150' to 125' and adding a second 125' monopole to accommodate multiple carriers. In addition, CWS rotated the new compound 90° to align the monopoles in parallel with Route 287, thereby hoping to minimize their visual impact on the Turnpike.

According to the County Staff Report for the Planning Commission Public Hearing dated September 17, 2007, condition #5 under "IV Conditions of Approval – September 5, 2007", page 7:

"The applicant shall utilize existing mature vegetation surrounding the equipment compound to create a 140-foot radius Tree Save Area (TSA) as depicted on the Special Exception Plat. The TSA shall be inspected annually by a certified arborist for potential disease and insect damage for the duration of the commercial public telecommunication use and these reports shall be submitted to the County. The applicant and property owner reserves the right to remove, in consultation with the County Urban Forester, any dead, damaged, dying or diseased trees and invasive vegetation in the TSA. The Applicant shall maintain the TSA equivalent to and/or in lieu of the required Type IV Buffer Yard with a minimum width of 140-feet."

Co-Location:

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate that would meet the carrier's coverage objectives.

CWS has designed the two (2) monopoles to accommodate up to three (3) co-locations each for a total of six (6) co-locations.

ATC recommends only one (1) tower for this site. If the original monopole is fully leased, then a second monopole can be considered.

1.2 Structural

The two (2) proposed 125-foot monopole tower designs shall consist of high strength steel and shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Structural drawings of the monopoles signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the towers' ability to structurally accommodate the antennae and associated appurtenances of three (3) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure. Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

A RF Analysis Report has not been submitted with the Application. In consideration of this proposal to construct two (2) monopoles in close proximity to one another within the same compound, a certified RF Analysis Report is recommended.

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was not submitted with this Application.

1.5 General Safety

The 60' x 80' site compound will be surrounded by suitable 7' security fence with 1' of barbed wire to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, and routine and emergency contact information and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed.

In consideration of the close proximity of the two (2) monopoles to each other, it is recommended that an interference study be performed using the exact data of the co-locators on the tower if both are approved and not leave to chance if a carrier will come to the second tower.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDURAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

“Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.”

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A NEPA Phase I Evaluation, dated July 13, 2007 and prepared by Baxter Consultants, Inc. was submitted with the Application and indicates NO IMPACT.

However, it is important to note the following responses:

According to the response from the Department of Game and Inland Fisheries dated January 9, 2007, “This project is approximately 0.5 mile from tributaries to a portion of Catoctin Creek that is designated a Threatened and Endangered species’ Water. This designation is due to documented occurrences of the state threatened wood turtle (*glyptemys insculpta*). Therefore, the applicant should coordinate with the VDGIF

Environmental Services Section (804-367-693) concerning potential impacts to this resource.”

According to the VDGIF Environmental Services Section response dated January 29, 2007, “Based on the scope and location of this project site, we do not anticipate significant adverse impacts upon waters known to support ST wood turtle. However, due to the proximity of this project site to such waters, we recommend that all contractors associated with work at this site be made aware of the possibility of wood turtles on site and become familiar with their appearance, status and life history. If any wood turtles are encountered and are in jeopardy during the development or construction of this project, immediately remove them from danger and move them safely to suitable habitat in or near the closest perennial stream.”

A NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
 - Figures, Drawings, Maps
 - Tribal Correspondence
 - Land Resources Map and FEMA Floodplain Map
 - SHPO Correspondence (See next Section 2.4 “Historic Impacts)
 - Department of Game and Inland Fisheries Response
 - Department of Conservation and Recreation Response

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President’s Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A response dated May 17, 2007 from the Virginia Department of Historic Resources (VDHR) was submitted with the Application. VDHR's response is the following:

“With respect to historic architecture, the consultant recommended that the following three properties were potentially eligible: George Ash House (DHR 053-0350), for Criteria A and C; Bjorkman House (DHR 053-0646), for Criterion C, and The Hermitage (DHR 053-0137), under Criterion C. We agree that these properties should be treated as eligible for the purposes of this project and warrant additional evaluation at a later date.

As three historic architectural properties are within the Area of Potential Effect, we recommend that the project will have an effect on historic resources. Based on the information provided, however, the effect will not be adverse.”

2.5 Supporting Documentation

The Applicant did include documentation supporting the construction of the proposed site in the form of propagation mapping. RF coverage maps from Verizon Wireless, Sprint-Nextel, and T-Mobile showing their wireless coverage with and without the proposed CWS site was submitted.

An independent RF analysis has been performed by this consultant, with coverage maps appended to this report, verifying that the applicant will be able to meet their stated coverage objectives to provide the wireless coverage necessary to alleviate the lack of coverage encountered in this area.

Supporting documentation in the form of photo-simulation was submitted with the Application. This Consultant believes the photo-sims are an accurate representation of the monopoles from various locations surrounding the proposed site.

3.0 RECOMMENDATIONS

This application represents an appreciable intent on the part of the Applicant to conform to all applicable federal, state, and local regulations, accepted industry practices, and specific County ordinances regarding construction of new telecommunications towers. It is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Slight Set Back Adjustment from Property Line.
- Structural Drawings;
- Grounding specifications;
- A certified RF Analysis Report;
- An interference study;

In addition, it is the opinion of this Consultant that only one 125' monopole should be considered for approval for this Application.

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

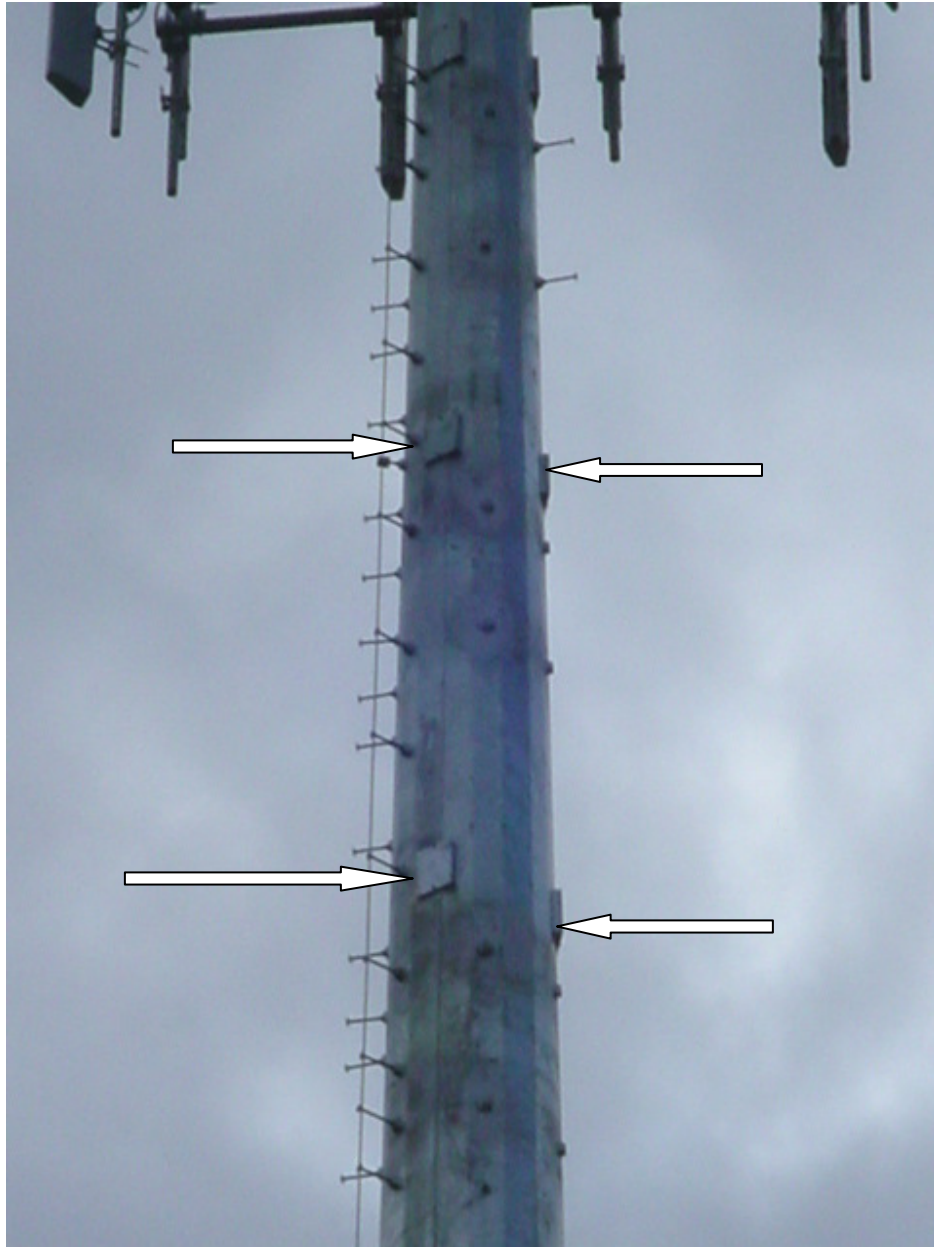
Respectfully submitted,

George N. Condyles IV

George N. Condyles, IV
President & COO

125' AGL Monopole Tower proposed by CWS





**Cable passes through the center of the tower “Tube” and out through
“Hand Hold” ports.**



West View of Proposed Tower



North View Along Pasture Tree Line toward Rt. 287



**Approximate Location of Tower Compound in treed Area.
Trees Approximately 60 to 70' AGL**



View from Proposed Compound to Rt. 287



Entrance South View along Tree line

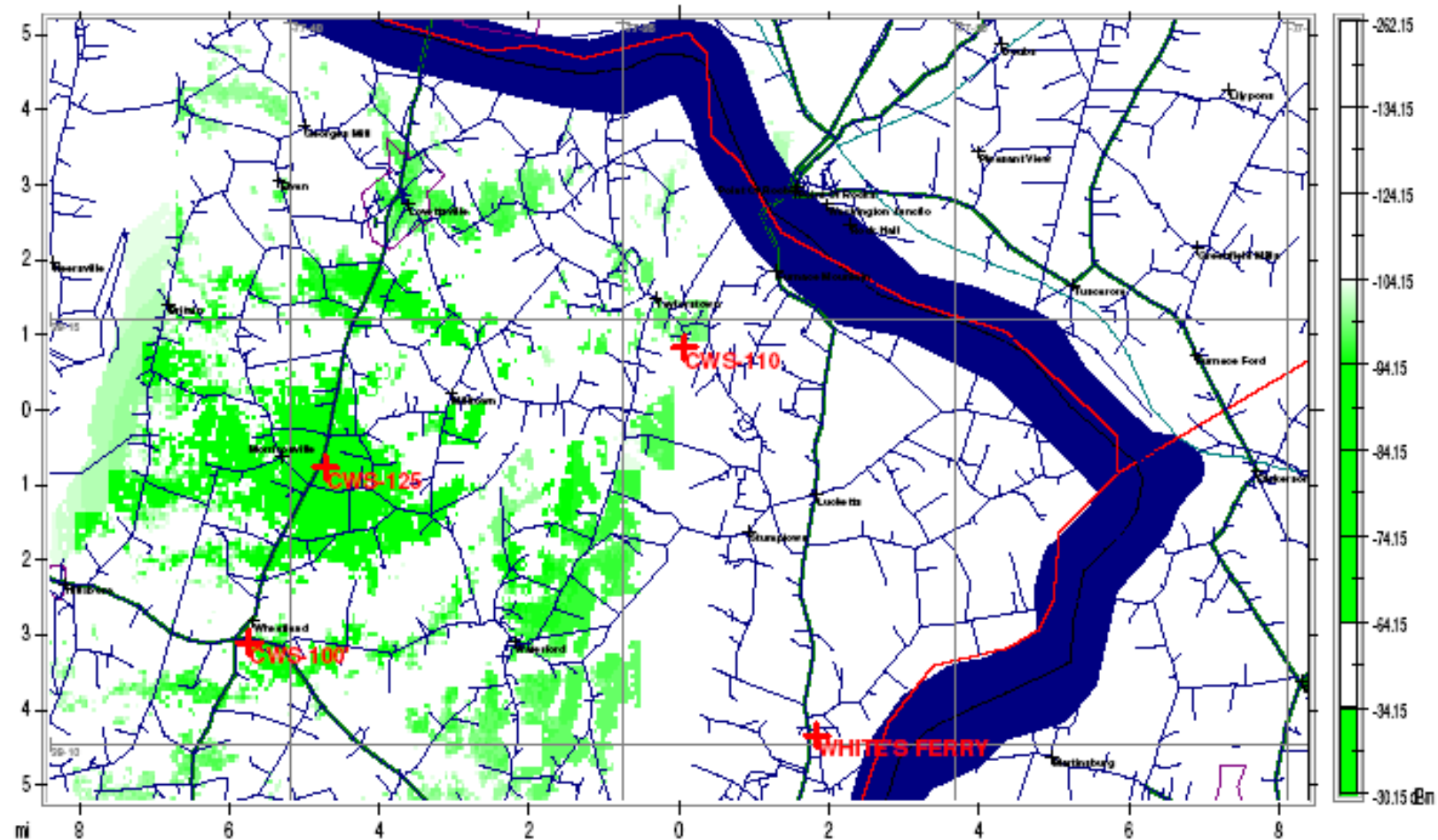


**Intersection of Rt. 287 and Site Entrance
Access Road to parallel Rt. 287**



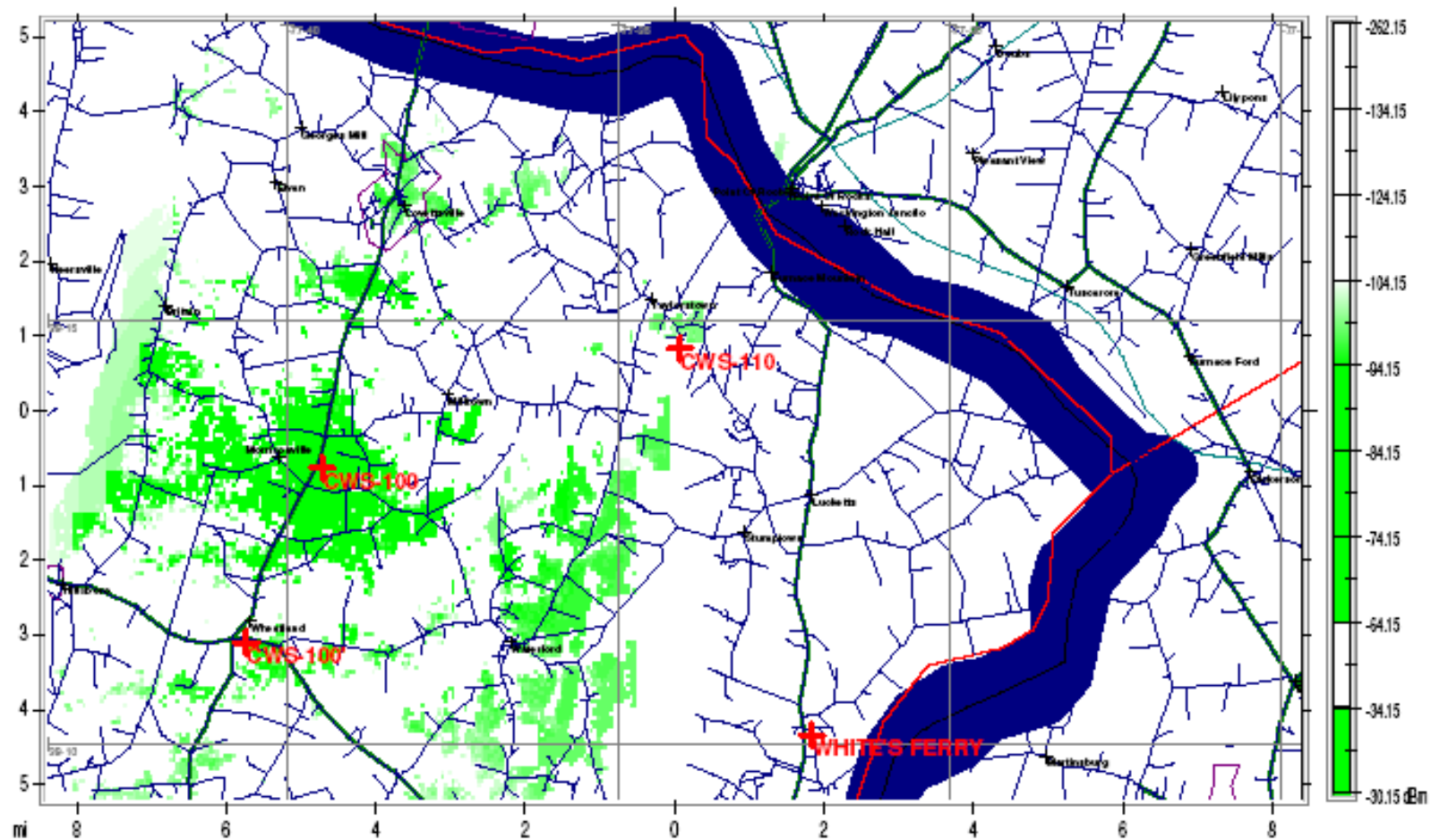
North View from Treed Entrance toward Rt. 287

LOVETTSVILLE, LOUDON COUNTY, VIRGINIA



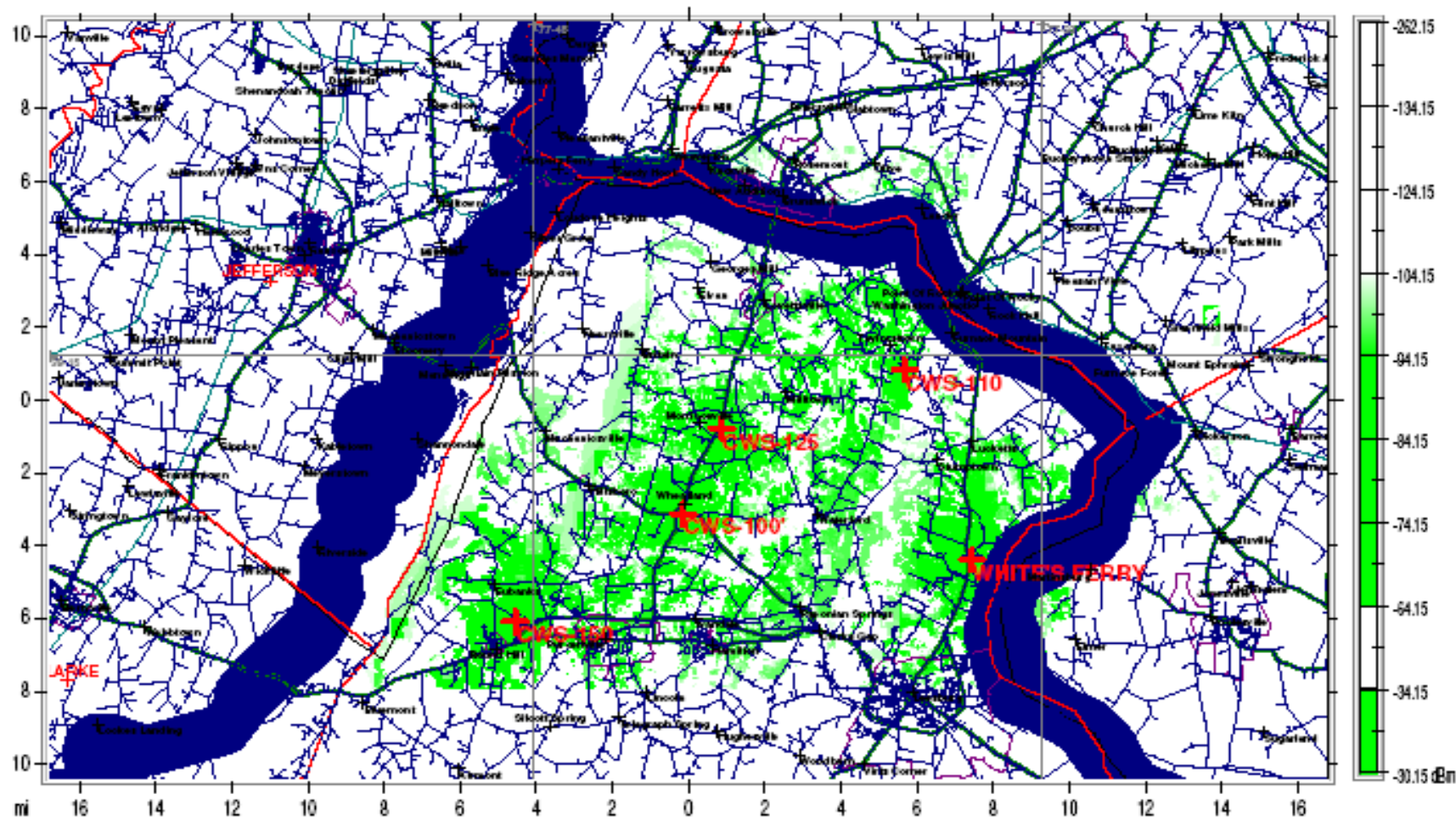
CWS-125 AGL

LOVETTSVILLE, LOUDOUN COUNTY, VIRGINIA



CWS-100 AGL

LOVETTSVILLE, LOUDON COUNTY, VIRGINIA



ALL CWS SITES-WHEATLAND-ARLINGTON CORNER, TAYLORSTOWN, WHITE'S FERRY, ROUND HILL



Antenna Structure Registration

[FCC](#) > [WTB](#) > [ASR](#) > [Online Systems](#) > TOWAIR

[FCC Site Map](#)

TOWAIR Determination Results

[? HELP](#)
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*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates

Latitude	39-13-15.1 north
Longitude	077-39-27.6 west

Measurements (Meters)

Overall Structure Height (AGL)	39.6
Support Structure Height (AGL)	38.1
Site Elevation (AMSL)	138

Structure Type

TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification

Notify Tribes and Historic Preservation Officers of your plans to build a tower.

Note: Notification does NOT replace [Section 106 Consultation](#).

ASR Help	ASR License Glossary - FAQ - Online Help - Documentation - Technical Support
ASR Online Systems	TOWAIR - CORES - ASR Online Filing - Application Search - Registration Search
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Federal Communications Commission
445 12th Street SW

Phone: 1-877-480-3201
TTY: 1-717-338-2824

<http://wireless2.fcc.gov/ULsApp/AsrSearch/towairResult.isp:JSESSIONID=ASRSEARCH=s9vcHvnJTJS...> 11/5/2007

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